NEWSLETTER
Of The
Arboretum of The Barnes Foundation
MERION, PENNSYLVANIA 19066
NUMBER 5 · AUGUST 1970

THE 1970 TOUR

JOHN M. FOGG, JR.

From June 11 to July 2 my wife and I conducted a group of 27 persons (many of them students of the Arboretum School) on a horticultural and botanical tour which visited Finland, the Soviet Union, Sweden, Norway and Denmark. We left New York, by regularly scheduled jet flight, on Thursday, June 11, and late the following morning arrived in Helsinki or Helsinfors, the capital of Finland.

That afternoon, for which no activities were scheduled, was devoted to shopping (Helsinki has several fine shops and book stores) and to wandering through an extensive park which leads down to the waterfront. It was interesting to observe lilacs just coming into bloom (we had seen them in full flower a month earlier at home) and *Laburnum* and *Berberis* still in bud. We had to remind ourselves that we were here at 60 degrees north latitude, instead of on the 40th parallel which passes through Philadelphia.

The following morning our chartered motorcoach took us first to visit one of the city's market places. This one, located on the waterfront, was varied and colorful. On the prow of one of the boats the owner was selling potatoes and lilies-of-the-valley. Another one offered eels and primroses. Still another specialized in fish and lilacs. (Fig. 1).

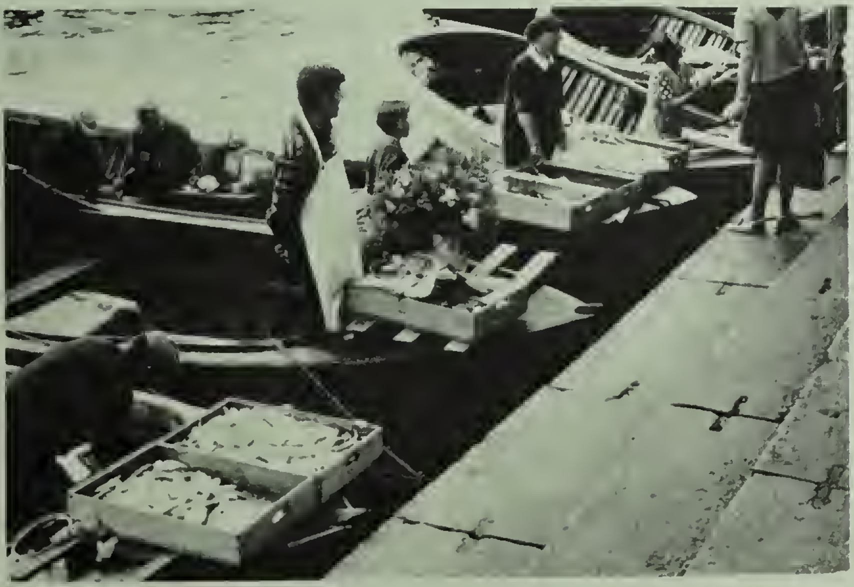

Fig. 1. Waterfront Market at Helsinki. Fish and Lilacs for Sale

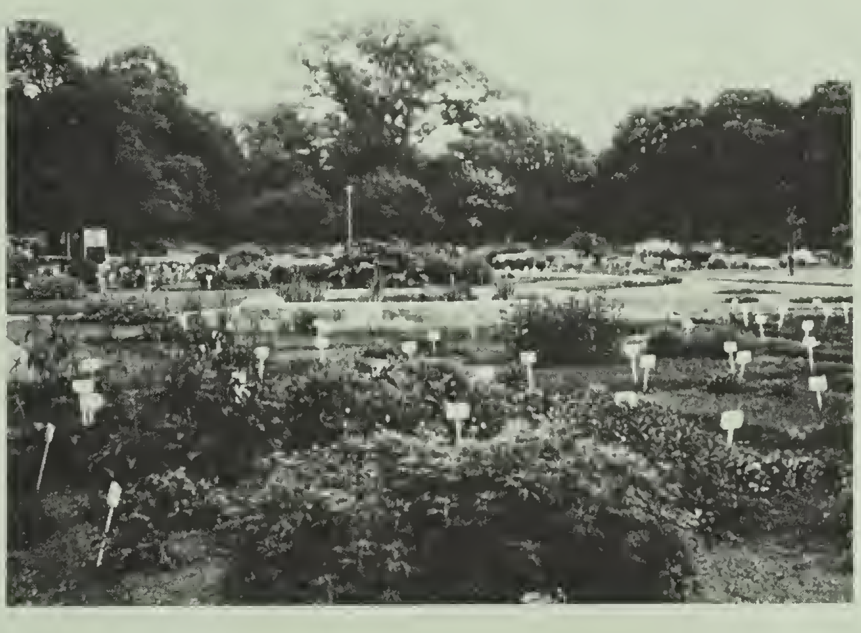

Fig. 2. Helsinki Botanical Garden. Systematic beds

We then drove for many miles through the open countryside to Hyvinkaa to inspect the Vakkuri Horticultural Center. This is a region of extensive greenhouses where roses, carnations and many other ornamentals are grown under experimentally controlled conditions.

Adjacent to these greenhouses was an area of relatively undisturbed woodland and it was here that members of the party who had not before been to Scandinavia had an opportunity to become acquainted with its characteristic vegetation. All of this portion of northwestern Europe was originally dense coniferous forest composed of only two species: *Pinus sylvestris* and *Picea Abies.* Our Finnish friends naturally objected to our referring to these plants as Scots pine and Norway spruce respectively and yet these are the common names by which these wide-ranging species are known throughout the English-speaking world.

Mixed with these two ubiquitous conifers are a few deciduous trees: aspen (*Populus tremula*), two birches (*Betula pubescens* and *B. verrucosa*), the European relative of our mountain ash (*Sorbus aucuparia*) and an alder (*Alnus*

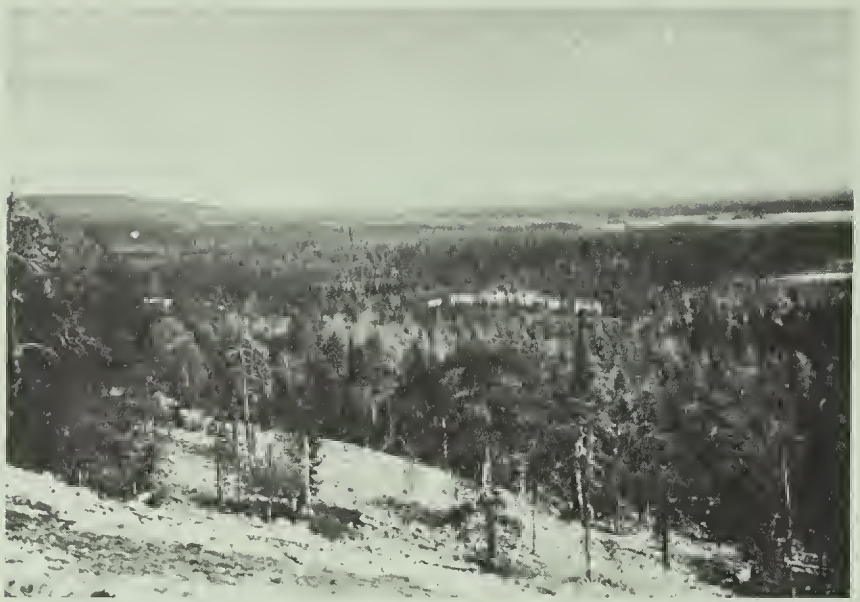

Fig. 3. View of Spruce-Pine Forest. Pyhatunturi

glutinosa). In addition there are several shrubs, e.g. *Salix* spp., but the above species constitute the primary arboreal components of this section of Europe. Such familiar trees as oak, ash, linden, beech, etc., are largely lacking, except where cultivated.

The herbaceous flora of these woods included star flower (*Trientalis borealis*), the European counterpart of our wild American lily-of-the-valley (*Maianthemum bifolium*) and that anomalous member of the Lily Family (*Paris quadrifolia*), in which the leaves and flower parts are in fours instead of in threes, as in our related genus, *Trillium.*

Following lunch at Dipoli, a student center, we visited the radiantly new garden city of Tapiola, with its fine apartments, manicured flower beds and inviting swimming pools and fountains.

Late that afternoon we visited the Botanical Garden of the University of Helsinki, where we were welcomed by the Horticulturist, Dr. Annikki Saarisalo. This garden, of about 12 acres, is rich in plants of Scandinavia, as well as those of Patagonia. A small, but highly attractive rock garden included such genera as *Saxifraga, Antennaria, Sedum, Androsace, Primula,* etc. As in so many European gardens affiliated with a university, there was an extensive systematic section where the plants were arranged according to their taxonomic relationships. (Fig. 2). The greenhouses were bulging with a wealth of interesting material including ferns, palms, bromeliads, orchids and a good representation of insectivorous plants.

Fig. 4. Ferry at Suvanto

Early on the morning of Sunday, June 14, we left Helsinki on a two hour flight to Rovaniemi, changing planes at Oulu on the Gulf of Bothnia. Following lunch at the sumptuous Hotel Polar we drove a few kilometers north to a lodge situated directly on the Arctic Circle, where each member of the party was given a certificate confirming his crossing of this legendary line.

Of far greater interest to most of us was the vegetation of the surrounding spruce and pine woods. The moist, peaty forest floor was carpeted with a dense turf of Ericaceous plants of which *Calluna vulgaris* (not yet in flower) was the most conspicuous. In full bloom, however, were the bog-rosemary (*Andromeda polifolia*), the European relative of our Labrador-tea (*Ledum palustre*) and the evergreen mountain cranberry or linganberry (*Vaccinium Vitis-Idaea*). Two low, deciduous species of *Vaccinium* (*V. Myrtillus* and *V. uliginosum*) were likewise in flower. In the former the globular corollas are a delicate pink; in the latter they are white and cylindrical.

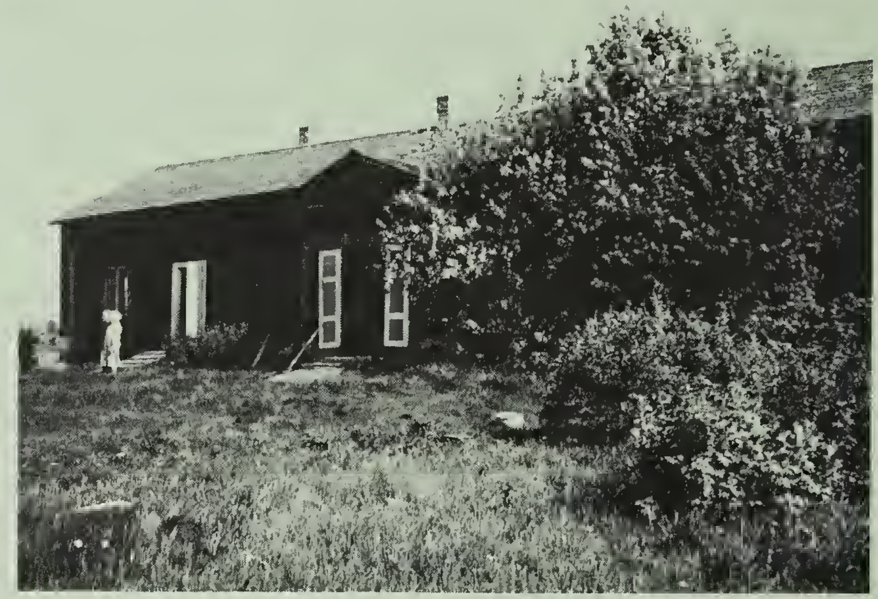

Fig. 5. Lapp Dwelling at Suvanto

Also present in these woods were the curlewberry (*Empetrum nigrum*) and the cloudberry or baked-apple (*Rubus Chamaemorus*), the white flowers of the latter dotting the ground like a multitude of stars. An attractive dwarf birch (*Betula nana*), with roundish leaves seldom more than half an inch across, was all around us, as were two species of cotton-grass (*Eriophorum angustifolium* and *E. polystachyum*).

To those of us familiar with the flora of Arctic America, or even the high mountains of New England, most of these species were old friends; for others they provided an introduction to the basic type of vegetation which we were to encounter repeatedly during the rest of our tour.

The following morning we drove northeastward for two hours through a region of cleared forest land to Pyhatun-

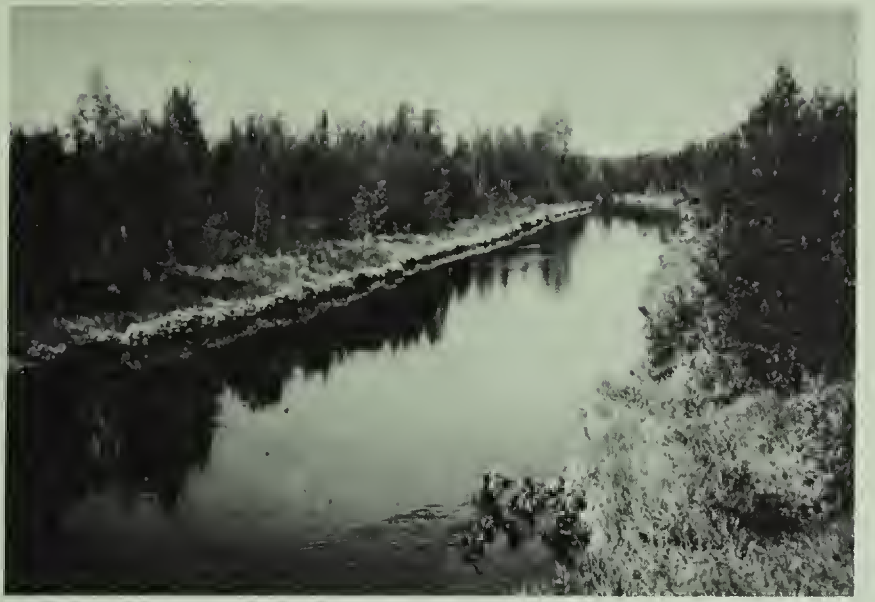

Fig. 6. *Caltha palustris* along stream

turi, where we put up at the Hotel Kultakera, a popular ski resort. That afternoon we ascended by ski-lift to the summit of a nearby mountain which, although less than 2000 feet above sea level was still replete with snow patches. (Fig. 3). Here we found a rather meager vegetation, the species of which could be counted on the fingers of two hands. Among the plants which we had not previously seen were the alpine bearberry (*Arctostaphylos alpina*), *Betula glandulosa* and *Lycopodium alpinum.* A more extended search would doubtless have yielded additional representatives of the tundra flora.

In the mossy woods around the hotel were the twinflower (*Linnaea borealis*), the star-flower (*Trientalis borealis*) and several species of terrestrial orchids. Most of these were too young to be identified, but the beautifully mottled leaves of *Orchis maculata* were umistakable. Here also, for the first time we saw the Arctic bunchberry (*Cornus suecica*). This species, which is widely distributed across northern Eurasia, also occurs in Greenland, Labrador, Newfoundland, the Maritime Provinces and Alaska.

On Thursday, June 16, we drove still further northward to visit a typical Lapp village. At this juncture it is perhaps not inappropriate to point out that Lapland, or Lappland, is a region of some 150,000 square miles lying above the Arctic Circle and extending over what is today northern Norway, northern Sweden, northern Finland and the Kola Peninsula in northwestern Russia.

Fig. 7. Group at Komarov Botanical Institute, Leningrad. Dr. Golovach in center with dark tie

The village, if such it may be called, goes by the name of Suvanto (not to be found on any of our maps) and consists of a score or more of structures, most of them relatively modern. We were forced to leave our motor coach on the south shore of a small river and board a ferry which, propelled by an outboard motor, took us to the opposite shore. (Fig. 4). We then walked a good long Finnish mile to our destination.

The particular compound to which we were welcomed by our host and his wife consisted of half a dozen buildings of hewn beams, weathered gray by years of exposure to the elements. (Fig. 5). In addition to the residential structure there were barns for large animals, small animals and the winter's supply of firewood. But in the residence itself there were, believe it or not, electricity, telephone and television! Truly a fine insurance against the tedium of the long Arctic night.

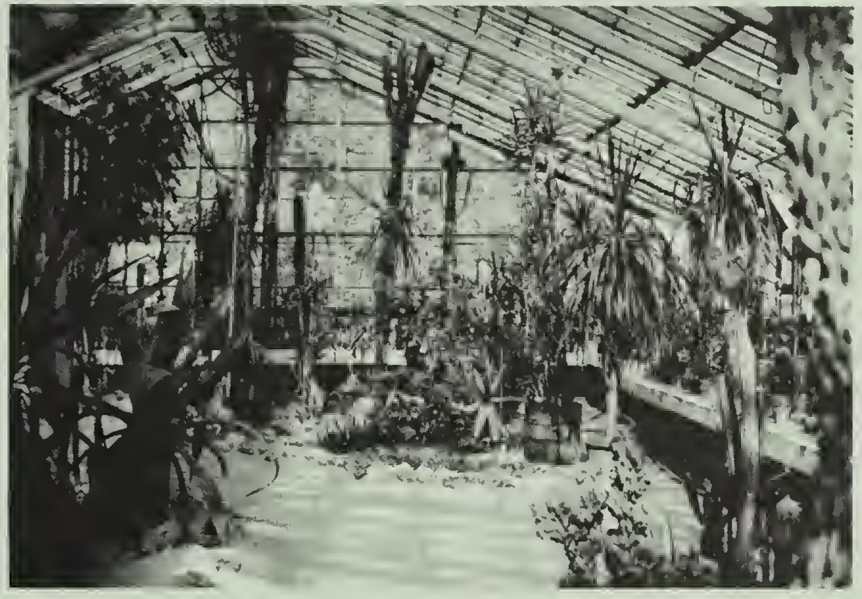

Fig. 8. Succulent House at Komarov Botanical Institute, Leningrad

Although the area had been largely cleared for agricultural and grazing purposes we were so fortunate as to find a few specimens of *Rubus arcticus,* a low-growing raspberry with attractive pink flowers. Here, also, we found the holy grass or sweet grass, *Hierochloe alpina,* a species which becomes increasingly fragrant upon drying and is widely used in basketry.

On our return from this Lapp village we stopped to photograph a small stream the banks of which, as far as the eye could reach, were bordered with solid stands of marsh marigold (*Caltha palustris*), the same species which occurs in wet habitats all across northern North America. (Fig. 6).

After luncheon in Rovaniemi we flew back to Helsinki where we spent the night. The following morning we departed by motorcoach for Leningrad.

Most of southern Finland is agricultural land with only an occasional vestige of the original coniferous forest. A short distance beyond Karhula we stopped at a restaurant which offered a prodigious smorgasbord-type luncheon. In the low wet ground behind the restaurant were growing the

Fig. 9. Group at Uppsala Botanical Garden. Dr. Nils Hylander at extreme left

wild calla (*Calla palustris*), the purple-flowered *Potentilla palustris* and a *Pedicularis* which we took to be *P. sylvatica.*

Beyond Karhula we drove for many miles through spruce-pine forest intermixed with birch, alder and mountain ash. The forest flower consisted of an almost solid cover of *Calluna,* which must present a fine show of color in late summer.

After crossing the border we stopped briefly at Vyborg (Vipuri), formerly a Finnish town but now in the Soviet Union, and reached our hotel in Leningrad in early evening.

Wednesday, June 17, was devoted entirely to sightseeing. Leningrad, located on the islands at the mouth of the Neva River is a beautiful city, with broad streets, numerous churches and palaces, fine parks and handsome public buildings. We were treated by our Intourist guide to a discourse on the history of the city (in particular to the siege of 1941-44) and shown many important monuments.

In the afternoon we rode miles out into the country to visit Peterhof, the summer residence of Peter the Great. This immense ornate structure is located in a vast park featuring scores of guilded statues, pavilions and fountains.

Everywhere in and around Leningrad tall plants of lilacs were in full bloom in a pleasing array of colors. These were not, as might have been expected cultivars of *Syringa vulgaris,* but rather variable forms of *S. persica* and *S. Josikaea,* which seem to flourish amazingly well in this climate.

Another surprise was the widespread use of *Cotoneaster lucida* as a clipped hedge plant. We saw this along some of the boulevards, in front of the Hermitage and in a large park adjoining our hotel.

On the morning of June 18 we visited the Hermitage, certainly one of the world's greatest art galleries, and following lunch we proceeded to the Botanical Gardens of the Komarov Botanical Institute. Here, due to poor management on the part of our guide, we were an hour and half late in keeping our appointment with the curators whom Dr. Avrorin, the Director, had kindly assigned to receive us.

Nevertheless, we were greeted cordially by Dr. Alexander G. Golovach who drew our party around him and delivered in Russian an account on the history of the garden and the important scientists who had worked there. (Fig. 7). These remarks were translated into English for us by our guide and when he had finished I said, "Ask him about Maximowicz." "Oh, yes" he said "Maximowicz" and shook my hand vigorously. "And what about Turczaninov?" "Oh, yes, Turczaninov," another handshake. "And Kosteletzy?" "Oh, yes"; still another handshake, all of this with great good humor.

Suddenly he pointed to a large tree and asked me, in excellent German, "Was ist das?" Since it was a specimen of our eastern American silver maple I replied *"Acer saccharinum."* "Oh, no," he said, "It is *Acer dasycarpum."*

"Tell him," I requested, "that these are synonyms and that *saccharinum* is the preferred name." Hearty laughter and more pumping of the hands.

Since our time was greatly curtailed, due to our late arrival, we saw relatively little of the exhaustive outdoor collections of this garden which embraces more than 30 acres. We were, however, greatly impressed by the fine old conifers and deciduous trees from all the temperate regions of the earth.

One of the most striking of the conifers was *Larix dahurica* (or *L. Gmelinii*) from eastern Siberia. Another was a weeping variety of the European larch (*L. decidua* f. *pendulina*). There was a fine stand of Colorado blue spruce (*Picea pungens glauca*) and a walk lined with both spherical and pyramidal forms of arbor-vitae (*Thuja occidentalis*).

Conspicuous among the deciduous tree genera were *Quercus, Betula, Acer, Tilia* and *Ulmus.* There was a goodly series of *Syringa* and we were able to identify several of the species we had seen growing everywhere throughout the city. Among other shrubs we were pleased to see *Rhododendron caucasicum* and *R. ferrugineum* which are not too commonly cultivated.

Dr. Golovach then turned us over to Professor Popava, who conducted us through the greenhouses, of which there are twenty-two in this garden. It is certainly one of the most comprehensive and well-stocked glasshouse systems we had ever seen on any of our tours. Individual sections

Fig. 10. Uppsala Botanical Garden. Systematic beds

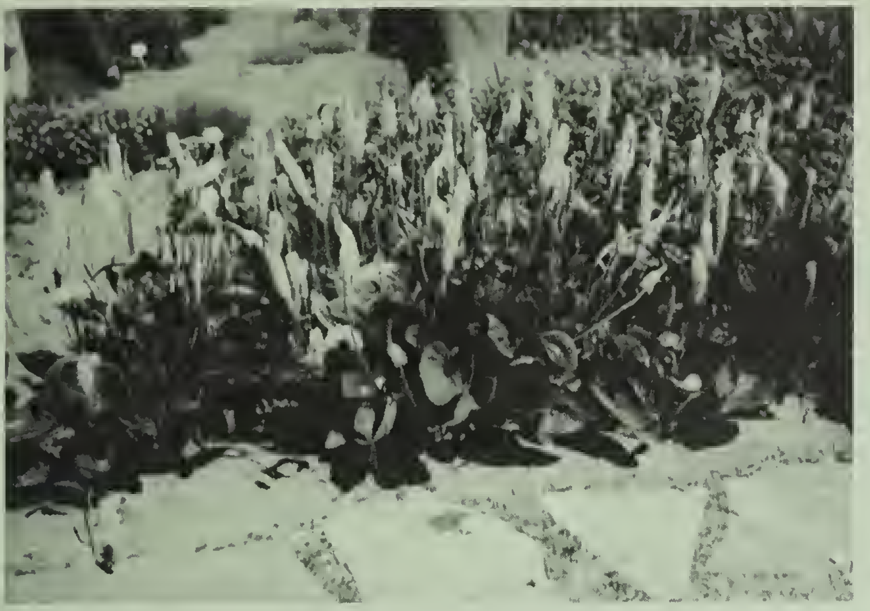

Fig. 11. *Plantago maxima* at Uppsala Botanic Garden

were devoted to ferns, cycads, palms, bromeliads, succulents, (Fig. 8) aquatics and countless other groups of tropical plants. Our half hour here was tantalizingly inadequate.

On Saturday, June 20, we flew back to Helsinki's magnificent modern airport, whence we emplaned for the short flight to Stockholm. The following day included visits to the Town Hall, the home and garden of Carl Milles, the sculptor, and a two-hour cruise on Stockholm's elaborate system of waterways.

From a botanical point of view Monday, June 22 must be regarded as the high-water mark of the entire tour. We drove first to Uppsala to visit the Botanical Garden of the University. Here we were received by the Curator, Dr. Nils Hylander, an internationally renowned botanist. (Fig. 9). For more than two hours Dr. Hylander conducted us around the spacious grounds with their rich collections of trees, shrubs, annuals and perennials. The peonies, which were a trifle past their prime, still presented a marvelous show of color. A circular sunken garden contained a bewildering array of alpine and rock plants. There were the usual systematic section (Fig. 10) and special gardens devoted to perennials, economic plants and medicinal species.

Although it would require many pages merely to enumerate the rare and unusual plants in this remarkable garden, the following few are so outstanding as to merit special mention:

Phuopsis stylosa: a monotypic member of the Rubiaceae from the Caucasus and Asia Minor, its tight clusters of pink flowers strongly reminiscent of an *Aethionema,* which at first we took it to be.

Calceolaria biflora: an attractive yellow "pocket-book" flower from the Andes of South America, apparently entirely hardy here.

Podophyllum Emodi: This native of India is related to our May-apple, but has reddish rather than pale yellow fruit.

Plantago maxima: A truly handsome plantain from Siberia, its exserted white stamens giving it the appearance of a *Sanguisorba.* (Fig. 11).

Leaving the University Garden with reluctance we went with Dr. Hylander into the town of Uppsala to visit the house and garden of the great Swedish botanist, Carl von Linné (or Carolus Linnaeus) who lived from 1707 to 1778. This garden had been established in the 17th century by Professor Olaf Rudbeck. It was here that Linnaeus arranged the plants according to his renowned "sexual system" of classification: all the plants with a single stamen are in one section, those with two in another, with three in still another and so on up to those with numerous stamens which are placed in the group Polyandria. Then within each class are sub-classes which are determined by the number of pistils (carpels). This system has long since been abandoned but historically it is of considerable interest and it is gratifying to find it still faithfully represented in this attractive small garden. (Fig. 12).

From Uppsala we drove to Hammarby which had been the home of Linnaeus during the latter years of his life. The houses, said to have been designed by him, are surrounded by a charming garden containing many of the plants which he knew and loved. The central one of three houses, which was opened for us by the custodian, contains furniture which was used by Linnaeus, most of his books (he was a very productive writer) and many pictures representing the distinguished naturalist from the days of his youth to his final years. Honors had been showered upon Linnaeus by the great of all nations and his memory is revered throughout the world. We all felt that we were treading upon hallowed ground. (Fig. 13).

Shortly after noon on Tuesday, June 23 we left Stockholm for Oslo. Since the flight is a short one (barely more than an hour) we arrived in Oslo in time to pay a visit to the Botanical Garden of the University of Oslo. Here we were graciously greeted by Dr. Per Sunding, the Curator. (Fig. 14). This garden, which was founded in 1812, occupies approximately 35 acres of rather hilly terrain. It was the first garden we had seen which was not located on a completely flat surface, a feature which gave it a distinct appeal.

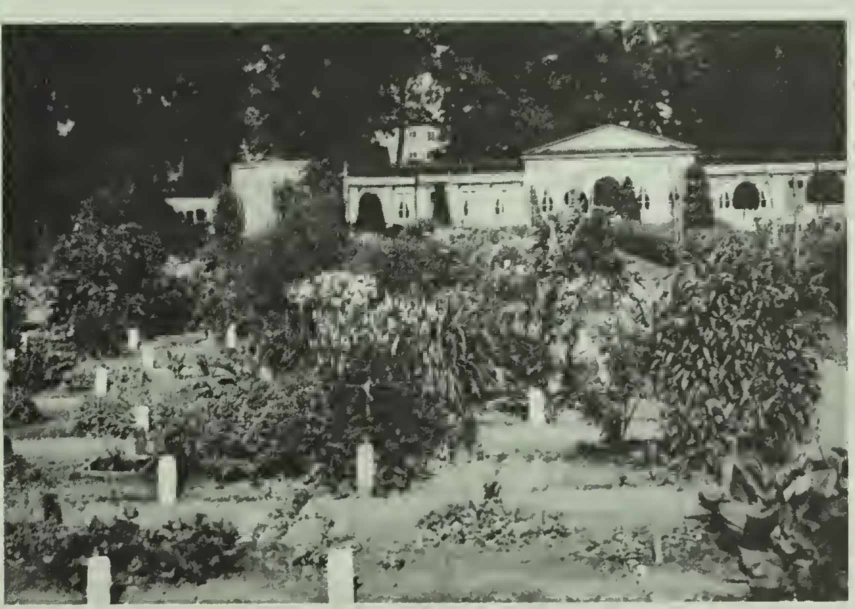

Fig. 12. Linnaean Garden, Uppsala. Orangerie at background

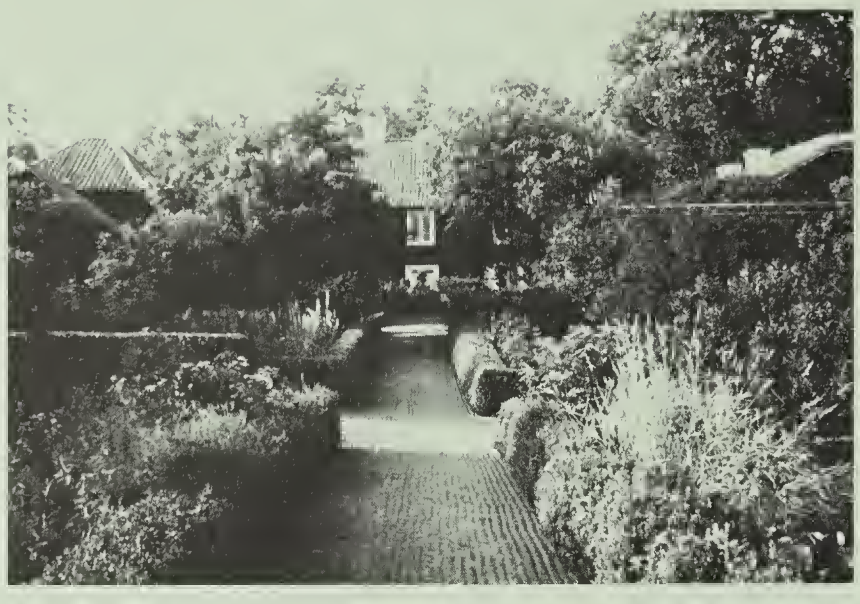

Fig. 13. Linné's Hammarby

Although we were at once attracted to a small rock garden filled with alpine species, Dr. Sunding apologized for it and led us away to examine a much larger rock garden, still in the course of construction, which he told us would require two or three years for completion.

Already this new garden contains an amazing array of succulent and alpine species. There were at least a dozen kinds of *Sedum* and almost as many of *Saxifraga.* The mountain avens, *Dryas octopetala* (which we were to see a day or two later in full flower) was here in fruit, its plumose styles making a fine show. We had seen the common globe-flower (*Trollius europaeus*) everywhere in low moist ground, but here was the smaller *T. pumilus,* a native of the Himalayas. A plant which we took to be *Aquilegia canadensis* proved to be *A. formosa,* a closely related columbine from our Rocky Mountains.

Dr. Sunding, with justifiable pride, showed us a small specimen of the dove-tree (*Davidia involucrata*), but confessed that it had not yet produced flowers. This species must be near the northern limit of hardiness here in Oslo.

Nearby was a fine tree of *Picea Breweriana,* that most beautiful of all spruces, which is indigenous to southern Oregon and northern California. Another western American plant was the blood currant (*Ribes sanguineum*), with drooping racemes of dark pinkish flowers.

Our eastern American honey-locust (*Gleditsia triacanthos*) and Kentucky coffee-tree (*Gymnocladus dioicus*) were represented by fine mature specimens, but a tree which was new to us was a handsome poplar, (*Populus koreana*).

As a Magnoliaphile I was greatly pleased to see *M. Sieboldii* perfectly hardy here and in full flower. Dr. Sunding kindly permitted me to collect a specimen for the herbarium of the Barnes Arboretum. Another plant which intrigued us was *Euonymus nana* var. *turkestanica,* a form with linear leaves. All around us were fine, mature trees and shrubs native to northwestern Europe and other areas of the north-temperate zone.

I asked Dr. Sunding about the section of the garden devoted exclusively to plants native to Norway which my wife and I had enjoyed seeing on an earlier visit, but he told us that this too was in the process of re-building and hardly worth looking at. Perhaps this was just as well, for the hour was late and we were feeling somewhat surfeited with the tremendous diversity of things we had seen.

Wednesday, June 24, was a full day of sight-seeing. First, we took the harbor launch across to the peninsula of Bygdøy where we inspected two aquatic craft as different as night from day. The first was the Polar exploration ship, "Fram," (housed in a huge tent-like building) in which Nansen in 1895 had reached close to the 87th parallel in his vain attempt to achieve the North Pole. Sixteen years later Amundsen had sailed the same ship to the Antarctic and reached the South Pole in December, 1911. The "Fram" is therefore justly labeled, "Farthest North–Farthest South."

The other was the raft "Kon-Tiki" on which Thor Heyerdal and his companions sailed from South America to Polynesia in 1947.

We then visited the building which houses several of the slender, graceful vessels of the sort used by the Vikings in their colonization of Greenland and their landfall in the New World in the 10th or 11th century.

The rest of the day included visits to the Vigeland Park, with its monumental sculptures, the Edward Munch Museum and the gigantic ski-jumps used during the Olympic games of a few years ago. Dinner that evening was at the fabulous Frognerseteren Restaurant overlooking all of Oslo and its extensive system of fjords.

On Thursday, June 25, we left Oslo for a three-day excursion through the fjords. Our route took us past Eidsvoll, where Norway's constitution was drafted in 1814 and for many miles along the shores of Lake Mjosa to Lillehammer, where we stopped for lunch.

The forest floor of the spruce-pine woods around our restaurant were similar to that which we had observed in Finland, which was not surprising since both places are at about the same latitude. Here, again, *Calluna vulgaris* was dominant with *Vaccinium Vitis-Idaea, Empetrum nigrum, Betula nana* and *Andromeda polifolia* in full attendance. A plant we had not seen before, although it is common

Fig. 14. Group in Botanical Garden, Oslo. Dr. Per Sunding third from left

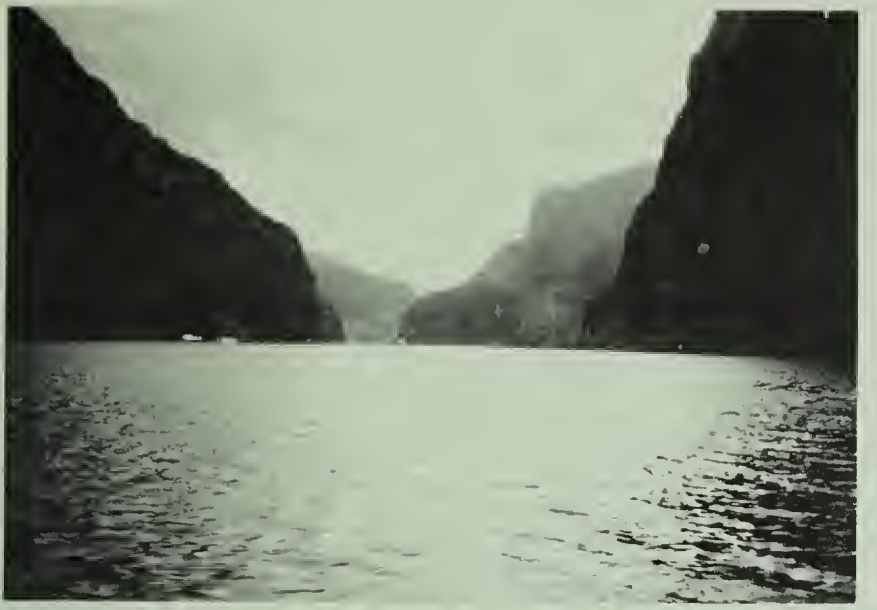

Fig. 15. Cruising in the Sognefjord

throughout northwestern Europe, was the red-berried elder (*Sambucus racemosa*). This is a close relative of our northern *S. pubens* and is a striking sight when in fruit, with its panicles of bright red berries.

Our route then took us up the Gudbrandsdal Valley through country which became increasingly mountainous, with snow-capped peaks on all sides. That night we spent in the picturesque Elveseter Hotel at Boverdalen.

A short after-dinner climb up the slope behind the hotel yielded several novelties, the most unexpected of which was *Cotoneaster integerrima*, a rounded shrub which was just coming into flower. This genus, of predominantly Oriental occurrence, is widely grown and occasionally escapes from cultivation in Europe, but *C. integerrima* is native to the continent and is found in dry, stony places mainly in the mountains, although it is absent from Russia and much of the Mediterranean region. On this same slope we found two new legumes, *Astragalus alpinus* and *Lathyris pratensis.* The Scrophulariaceae was represented by the semi-parasitic yellow-rattle (*Rhinanthus minor*) and two species of what at home we would call cow-wheat (*Melampyrum pratense* and the narrower-leaved *M. silvaticum*).

On a short walk before breakfast the following morning we found the beautiful purple avens (*Geum rivale*) in full flower and the tall northern aconite (*Aconitum septentrionale*) in bud; later we were to see the latter in all of its blue-flowered glory. The twin-flower (*Linnaea borealis*) was here in full bloom and the bearberry (*Arctostaphylos Uva-ursi*) was in young fruit.

Leaving Boverdalen after breakfast our bus began the steep ascent to the Sognefjell on the Jotunheimen. Soon we came up above the tree line and out on the tundra. Although subjected to a persistent drizzle, we made four stops to observe the fascinating vegetation of this rigorous rocky habitat where the plants are completely covered by snow for at least eight months of the year. Our first stop was in a pass approximately 4600 feet above sea level.

As is characteristic of the tundra flora throughout the northern hemisphere, the Ericaceae were much in evidence. Here, in addition to *Calluna,* was *Phyllodoce caerulea* at the very height of its blooming period. The mountain bearberry (*Arctostaphylos alpina*) and the alpine azalea (*Loiseleuria procumbens*) were also present, though not in flower. *Vaccinium Vitis-Idaea* was here still in tight bud, but the corollas of *V. uliginosum* were about to open.

The tight little cushions of moss-pink (*Silene acaulis*) were dotted with purple-pink flowers, but the greatest show of all was provided by the mountain avens (*Dryas octopetala*), which in certain spots formed a solid stand, its pure white flowers so numerous as to create the impression of a patch of snow.

At another stop we found the alpine bistort (*Polygonum viviparum*), which bears brownish bulbils in the lower portion of its inflorescences. Here also were two alpine willows, *Salix herbacea* and *S. reticulata* and two species of *Saxifraga, S. stellaris* and *S. rivularis.*

At another stop we observed the mountain sorrel (*Oxyria digyna*) and the alpine butterwort (*Pinguicula alpina*). At lower elevations we had seen much of the common lady's mantle (*Alchemilla vulgaris*), but here was its alpine relative, with much narrower leaflets and smaller flowers (*A. alpina*). Another species, familiar to those who have collected in our northeastern states, was the three-toothed cinquefoil (*Potentilla tridentata*).

At last we were forced to descend from this exalted botanical wonderland, but everyone agreed that it had been a gloriously exciting morning.

After passing through Skjolden our bus was driven onto a ferry at Kaupanger and for the next two and a half hours we cruised along the Sognefjord and up into the Naerofjord to Gudvagen. This trip along quiet waters, hemmed in by precipitous mountains, affords some of Norway's noblest scenery. (Fig. 15).

Despite its high latitude, this part of western Norway enjoys a fairly mild climate. This is, of course, due to its proximity to the Gulf Stream which make it possible, even in the fjords, to maintain orchards of apples, pears, cherries, etc.

Boarding our coach again at Kaupauger, we drove through Stalheim and Voss to Ulvik where we spent the night at the Brakenes Hotel on the shores of a beautiful

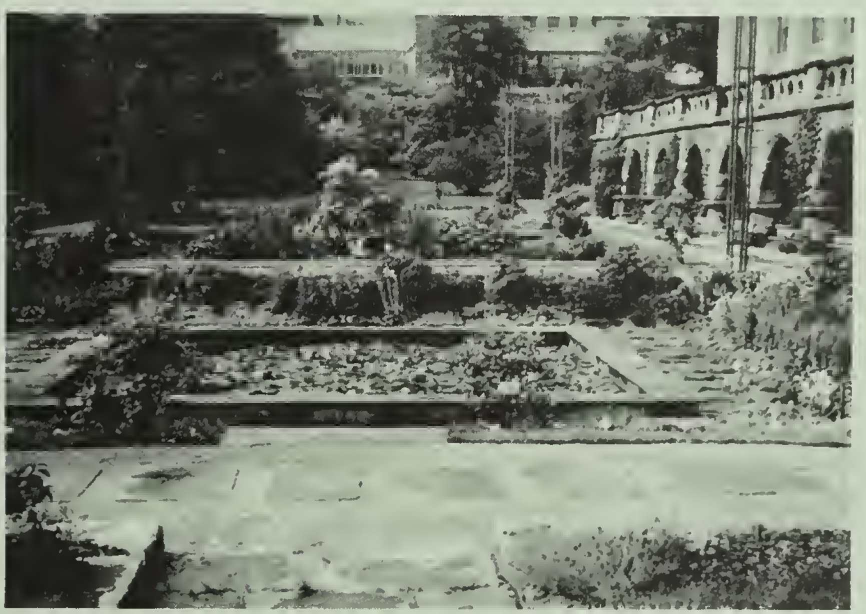

Fig. 16. Bergen Botanical Garden

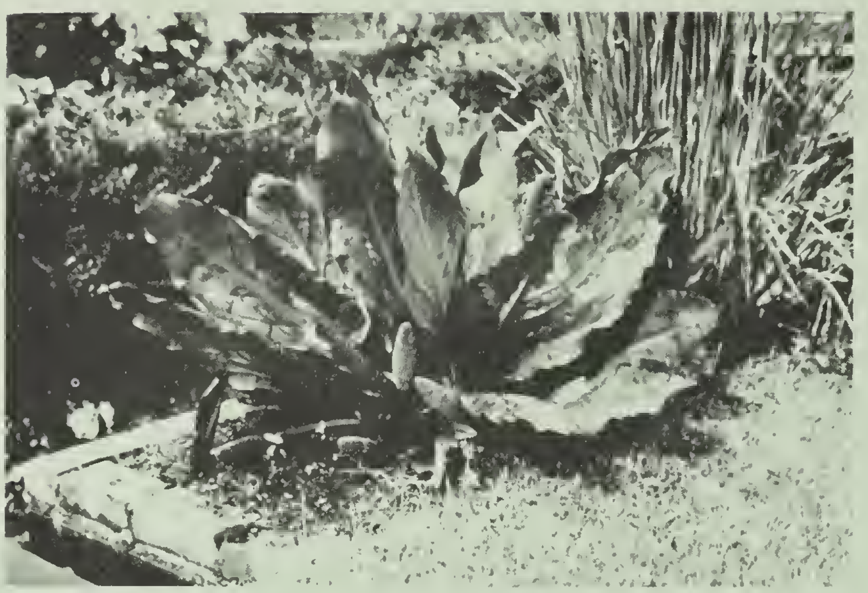

Fig. 17. *Lysichyton americanum* at Bergen Botanical Garden

lake. Had there but been a glacier on the mountains at the far end of this body of water, it would have been easy to imagine ourselves at Lake Louise.

On Saturday, June 27, we left Ulvic and drove along the northern shore of Hardangerfjord to Norheimsum where we stopped for lunch. We then continued by way of Tokagjel and over the Kvamskogen plateau to Bergen, which we reached in mid-afternoon.

Bergen is a delightfully clean and attractive fishing town, nestled among surrounding hills. Celebrating this year its 700th Anniversary, it wore a festive air. Knowing that the town boasted a botanical garden, I had written ahead to Dr. Knut Faegri, asking for permission to visit it. He had replied that even though he would be away, we would be more than welcome and he would arrange to have someone on hand to open up the greenhouses for us. Therefore, on the morning of Sunday, June 28, we made our way to the garden, which was only a few minutes walk from the hotel. (Fig. 16).

As we approached the entrance to the garden we were struck by a thirty-foot tall specimen of the monkey-puzzle tree (*Araucaria araucana*), a native of the Chilean Andes. We had, of course, seen this plant growing in several European countries such as Switzerland, Belgium, Holland and the British Isles, but it came as a distinct though pleasant shock to see it here at more than 60°North.

Although only about four acres in extent this proved to be one of the most rewarding gardens we saw on our entire tour. It contains two rock gardens, one of them devoted to perennials largely of temperate origin, the other occupied by alpine species.

In the first of these specialized gardens we noted with interest the use of cotoneasters as low, edging elements; *C. microphylla, C. apiculata* and *C. Dammeri* were the species utilized. Much of the plant material was quite out of the ordinary. Here, for example, were species of *Eryngium* and *Astrantia* (both members of the Umbelliferae) which none of us had ever seen before. *Rogersia,* a huge coarse-leaved genus in the Saxifragaceae, was represented by three species. We were pleased to see a luxuriant specimen of the western American salal (*Gaultheria Shallon*), far more impressive than anything we can achieve in the Philadelphia area. Doubtless, cool moist weather has something to do with this.

The second rock garden contained many of the alpine plants we had seen on our trip through the fjords: (*Dryas, Phyllodoce, Empetrum, Arctostaphylos,* etc.) and in addition scores of species from mountainous areas in other parts of the world. One of the most bizarre was a densely tufted cushion of *Bolax* (*Azorella*) *glebifera,* a member of the Umbelliferae from the Straits of Magellan. There were numerous forms of *Sedum, Saxifraga* and *Primula.* Primroses, in fact, are one of the featured attractions of this garden and chief among the species which were unfamiliar to most of us was *P. viati* from Yunnan and Szechuan Provinces in China.

Another specialty of this garden is its collection of *Rhododendron* and here, in addition to many of the more commonly grown species, were *R. brachyanthum, orbiculosum, Wardii, Williamsianum, vernicosum,* etc.

Bergen, too, has a dove tree, but it is appreciably older than the one in the garden at Oslo and has flowered annually ever since 1947. Close to the *Davidia* was a plant of Japanese Dogwood (*Cornus Kousa*) in which the bracts were a deeper pink than any of us had ever seen.

Members of the tour who had been with us in the British Isles in 1967 were delighted to see again flowering plants of the blue poppy (*Meconopsis*), which has its center of distribution in the region of the Himalayas.

Aquatic plants come in for a real spotlight in this garden and there are several ponds featuring this type of vegetation. In one section are many small circular pools, about five feet in diameter, each featuring a single species, e.g. water arum (*Calla palustris*), buck-bean (*Menyanthes trifoliata*), cat-tail, (*Typha* sp.), etc. Around another pond were fine plants of the western American skunk-cabbage, *Lysichiton americanum.* (Fig. 17).

Fig. 18. Group at Copenhagen Botanical Garden. Dr. Olaf Olsen at extreme right

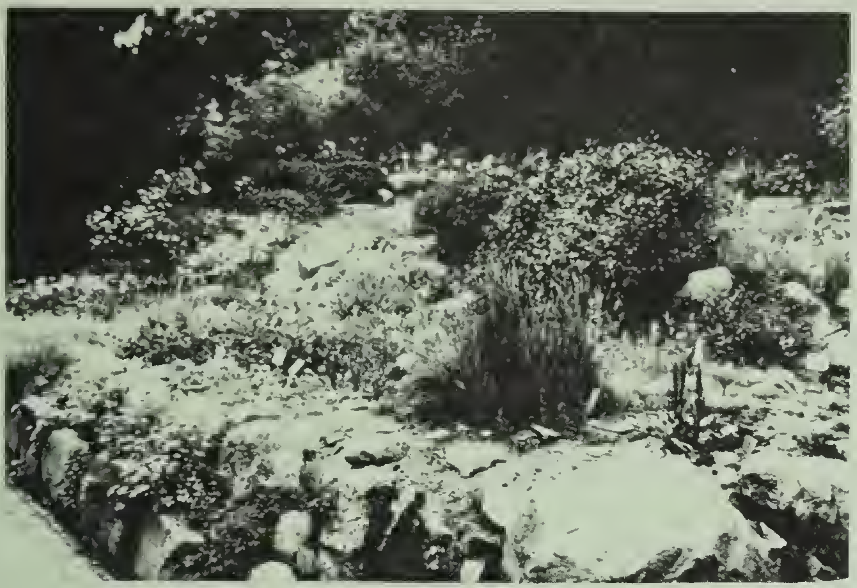

Fig. 19. Scree garden at Copenhagen Botanical Garden

Just a few of the other species which intrigued us in this remarkable garden were *Actinidia Kolomikta* (with brilliantly pinkish foliage), *Prunus serrula* (with deep rich, mahogany horizontally peeling bark) and *Crambe maritima* (a handsome white flowered crucifer from the sea-cliffs of western Europe).

At eleven o'clock Mr. Bjarne Spangelo arrived to open up the greenhouses for our inspection and for the next half an hour we found ourselves in a tropical jungle with tree ferns, palms, bananas, bromeliads, aroids and a host of other exotic species. There was a good collection of cacti and succulents, as well as a section devoted to insectivorous plants, including *Dionaea* and *Darlingtonia.* Most impressive were several plants in full flower of *Medinilla magnifica,* that spectacular Melastome from the Philippines.

Following lunch that same day we embarked on a sightseeing tour which included a visit to the home of Edward Grieg, Norway's most distinguished composer, and to an eleventh century stave church. We had seen this characteristically Norwegian type of church in Oslo and again at Lom, but this was probably the most impressive. The timber for these churches was obtained from oak trees which were intentionally killed and allowed to stand for several years, ridding them of pests and diseases, before being felled and fashioned into beams and shingles.

Since we were not leaving Bergen until mid-morning on the following day (June 29), several of us returned to the Botanical Garden to gloat once more over its treasures and to take pictures under better light conditions than had prevailed the previous day. On this occasion we were fortunate in meeting Dr. Arne Rosvik, a senior member of the staff, whose special interest is in *Primula.*

We left Bergen later that morning and, after a short flight, arrived in Copenhagen, where we were installed at the Palace Hotel facing the Town Hall Square.

The following morning we paid our respects to the Little Mermaid on the waterfront and then proceded to the Botanic Garden of the University of Copenhagen, where we were welcomed by the Curator, Dr. Olaf Olsen, and members of his staff. (Fig. 18).

The five major botanical gardens which we had visited (Helsinki, Leningrad, Uppsala, Oslo and Bergen) had all been close to the 60th parallel of latitude. Here in Copenhagen we had dropped down to less than 56°N. and the difference was at once apparent. In this garden of approximately 24 acres were many plants we had not seen before. For example, around the borders of a large lake was *Gunnera manicata,* a huge-leaved species native to Chile. It is true that it must be heavily mulched during the winter months, but even at that it is a surprising plant to be found growing outdoors in Denmark.

Copenhagen certainly has one of the finest rock gardens in western Europe, comparing favorably, many of us thought, with the ones at Munich and Edinburgh. We could have spent many hours, had time permitted, in examining and enjoying the hundreds of alpine and "rock-loving" plants displayed on its undulating slopes and summit. There was a goodly representation of that enormous genus, *Sempervivum,* e.g. *dalmaticum, ciliosum, ochroleucum,* etc., as well as of such other succulents as *Sedum, Rosularia, Crassula* and *Saxifraga.*

A plant which intrigued us vastly was *Roscoea Humeana,* a strange pink-flowered member of the Zingiberaceae, indigenous to China. Another was *Asperula nitida,* a cushion-forming, pink-flowered Rubiaceous plant from Greece, which is totally unlike the other members of this genus with which we were familiar.

This garden contains 120 species (not hybrids or cultivars, but species) of the genus *Rosa* and more than 200 species of Rhododendron, approximately one-third of the total number embraced in this highly important genus.

Space does not permit an enumeration of the distinguished collection of trees found in this garden. These are arranged primarily according to their natural affinities, so that the visitor passes in succession through such groups as poplars, oaks, beeches, elms, walnuts, maples, lindens, ashes, etc. One of the most entertaining was a crisp-leaved European beech, *Fagus sylvatica* var. *cristata,* which some of us had seen a few years before at the Kalmthout Arboretum in Belgium. *Quercus castanaefolia* was another species worthy of mention, as was *Juglans mandshurica,* a tree closely allied to our butternut, *J. cinerea.*

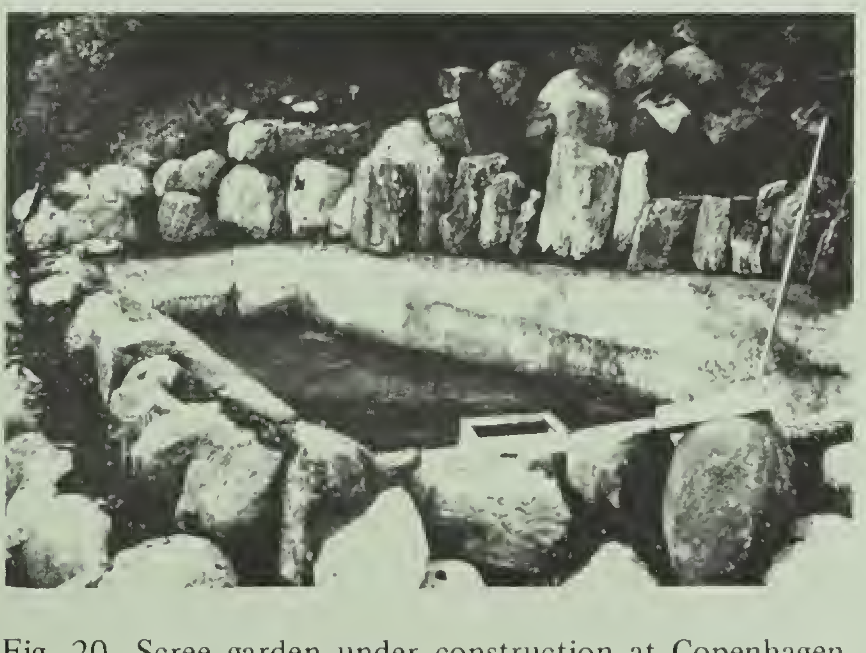

Fig. 20. Scree garden under construction at Copenhagen

One of the most noteworthy features of the garden is a well-designed arbor for vines which extends over a curving walk along the side of a large lake. This arbor (to which I have referred in a previous issue of this Newsletter) displays to excellent advantage such climbing or twining woody genera as *Aristolochia, Ampelopsis, Parthenocissus, Vitis, Actinidia, Akebia, Clematis,* etc.

Another fascinating feature is a scree garden, that is an area of loose stones, underlain by flowing water and supporting the type of vegetation often found at the edge of a glacial front or retreating ice field. (Fig. 19). Here, in addition to a well-established scree, we were so fortunate as to see a new one in the course of construction. Concrete pits, about two feet steep had already been built; these would later be filled with loose stones and gravel and inundated by a continuous flow of water supplied by an underground system of pipes. (Fig. 20).

One section of the garden is devoted exclusively to plants native to Denmark. For the student interested in taxonomy, ecology and plant geography at the University this serves as a valuable teaching adjunct.

In another area the plants were arranged in systematic sequence, a practice still followed in most European gardens, but unfortunately not always maintained in this country, where fundamental taxonomy has been temporarily overshadowed by other aspects of the plant sciences.

The greenhouses at Copenhagen certainly compared favorably with those we had seen elsewhere and one can but wonder how it had been possible to preserve these vast collections during the war-torn years of two or three decades ago.

More than 6000 species of plants are today being grown under glass at this garden. In one house alone there are over 600 species of orchids from Thailand. In other sections are spectacular displays of ferns, palms, aquatic plants, economic species, succulents and cacti.

Altogether, this is one of the great botanical installations in a continent which is replete with magnificent indoor and outdoor museums of living plants. These are the places where anyone interested in the economic, ornamental or purely scientific aspects of botany can find a wealth of material for study.

On our final full day in Denmark we paid a visit to the Fredericsborg Castle at Hillerod and the castle at Elsinore, the scene of Shakespeare's "Hamlet." As a final botanical observation let it be noted that on the sandy beach at the foot of this castle one of the members of our party collected two species not seen previously on our tour: the sea-beach sandwort (*Arenaria peploides*) and the sea-thrift (*Armeria maritima*).

On the following day, Thursday, July 2, we left for home and the 1970 Tour had come to an end.

Sapindaceae at the Barnes Arboretum

JOHN M. FOGG, JR.

The Sapindaceae or Soapberry Family is a group of 150 genera and about 2000 species of trees or shrubs (rarely vines or herbs), primarily distributed in the tropics of both Old and New Worlds.

The leaves are usually alternate and either simple or, more often, pinnately compound. The flowers, which are either perfect or imperfect, are usually small but tend to be borne in racemes or panicles which may render the plants conspicuous when in bloom. The flower parts are generally in fives, the ovary is superior, usually composed of three carpels, and the fruit may be a capsule, a berry or a drupe.

Probably the best known member of the family is the sub-tropical lychee (*Litchi chinensis*), which is highly esteemed for its edible fruit.

Rehder's Manual recognizes only four genera of this family as hardy in our area and since all of these are currently in cultivation in this Arboretum it seems fitting to place on record our observations concerning their characteristics and performance.

Koelreuteria paniculata Laxm. China-tree, varnish-tree, golden-rain. A tree to 10m. (35 feet) native to China, Korea and Japan. The leaves are pinnate or bipinnate and the leaflets are coarsely serrate or incisely lobed. The golden-yellow flowers are borne in loose panicles and in our area usually appear in early to mid-July. (Fig. 1). The bladder-like fruits are ovoid in shape, pointed at the apex and of a somewhat dirty brown color; they usually mature in August or September. (Fig. 2).

The arboretum's specimen of this tree is in the northeast corner of the property near the intersection of Lapsley

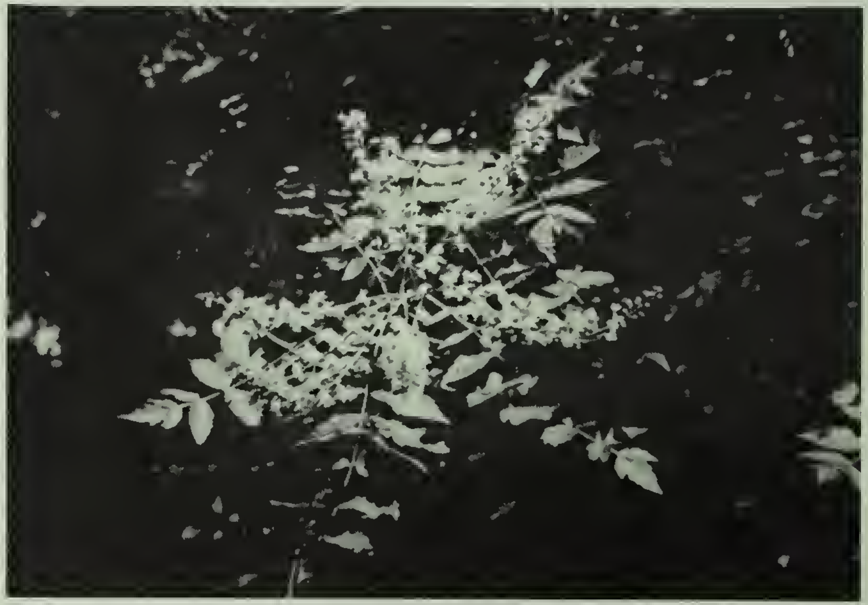

Fig. 1. *Koelreuteria paniculata* in flower

Road and Latches Lane. It was acquired in 1924 and is today about 9 m. (30 feet) tall.

At one time we had a small plant of var. *fastigiata* Bean, a form with ascending branches and columnar habit. However, this died in the severe winter of 1962-63.

Koelreuteria elegans (Seeman) A. C. Smith. In 1960 Mrs. Barnes obtained from F. D. Moore & Sons in Penn Valley, Pa. a plant named *K. integrifolia.* It was set out directly in front of the Gallery, has grown rather rapidly and is now a small tree approximately 8 m. (25 feet) tall. It differs from *K. paniculata* in that the leaves are bipinnate and the leaflets are usually entire rather than incised. Occasionally, however, a few of the leaflets are slightly serrate or even lobed. In August, 1969, this tree flowered for the first time, a full month later than is the case with *K. paniculata.* We were surprised to note, also, that the inflorescences were borne in an upright position, rather than more or less horizontally, as in that species.

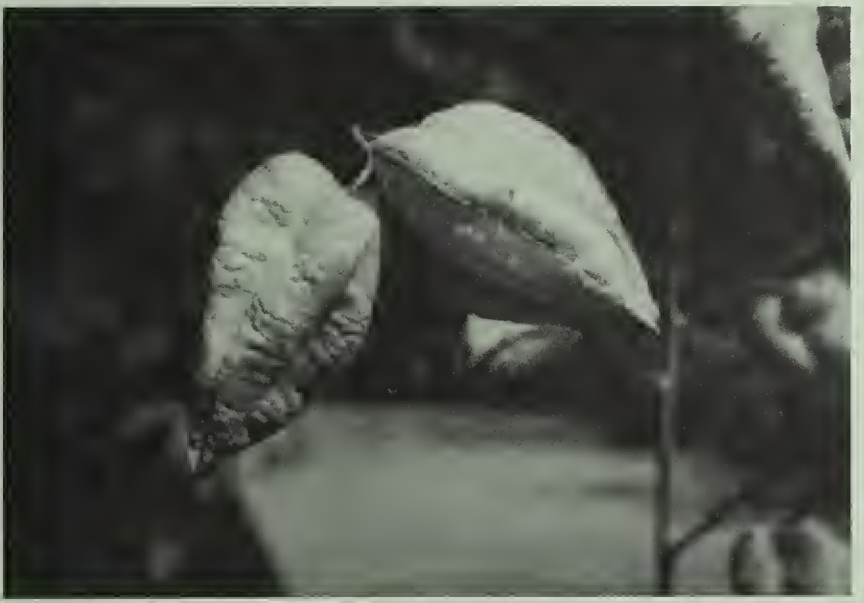

Fig. 2. Fruit of *Koelreuteria paniculata*

In October, when the tree bore fruit, another difference became evident; the capsules were depressed-globular, rather than ovoid, and were of a bright pinkish color instead of the drab brown of *K. paniculata.* (Fig. 3). Also, the fruit matured a month to six weeks later than is the case with the more familiar species.

Since there is no mention in Rehder's Manual, or any of our other reference sources, of *K. integrifolia* I sent a specimen from our tree to Dr. Carroll E. Wood, Jr. of the Arnold Arboretum, asking him to check the identity of our plant as well as to give us the authority for the name.

Dr. Wood replied that Merrill is the author of *K. paniculata* but that *K. elegans* (Seeman) A. C. Smith is the earliest epithet for this species. He added that it is probably the same as the plant cultivated in Texas and California as *K. formosana* Hayata or *K. Henryi* Dummer.

We would be pleased to receive information concerning this plant from other individuals or institutions which may have it in cultivation. In several respects (greater duration of the flowering period and attractively colored fruits) it seems superior to *K. paniculata.*

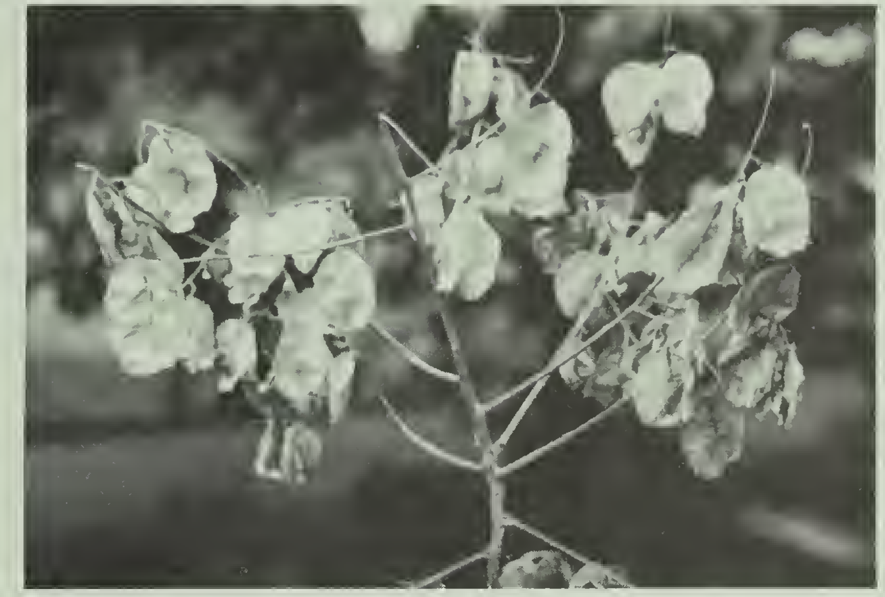

Fig. 3. Fruit of *Koelreuteria elegans*

Xanthoceras sorbifolium Bunge. Yellow-horn. A member of a genus of one or possibly two species from China. Although the names of the genera of most trees are feminine (e.g. *Pinus, Quercus, Betula, Fraxinus,* etc.) there are several exceptions to this principal and in the present instance the genus is neuter (like *Acer* and *Rhododendron*).

The generic name is derived from *xanthos,* meaning yellow, and *keras,* indicating horn, and alludes to the horn-like appendages on the disk of the flower.

The species in cultivation is a shrub or small tree to 8 m. (or about 25 feet) with upright-ascending branches and alternate, pinnately compound leaves, the opposite leaflets of which are usually serrate. The flowers, which are borne in racemes are either perfect or imperfect and the two sorts are usually found in the same inflorescence, a condition known as polygamous. The upper flowers of the raceme are usually fertile (bisexual) and the lower ones sterile or merely staminate. The corollas are about 2 cm. across, the largest and most showy of any of the genera here considered. (Fig. 4). The five thin, crisp white petals are blotched orange-red at the base and the fruit is a three-valved leathery capsule bearing several brownish seeds. (Fig. 5). Since the seeds of this plant are greatly esteemed by squirrels, the only way in which we can preserve them for propagating

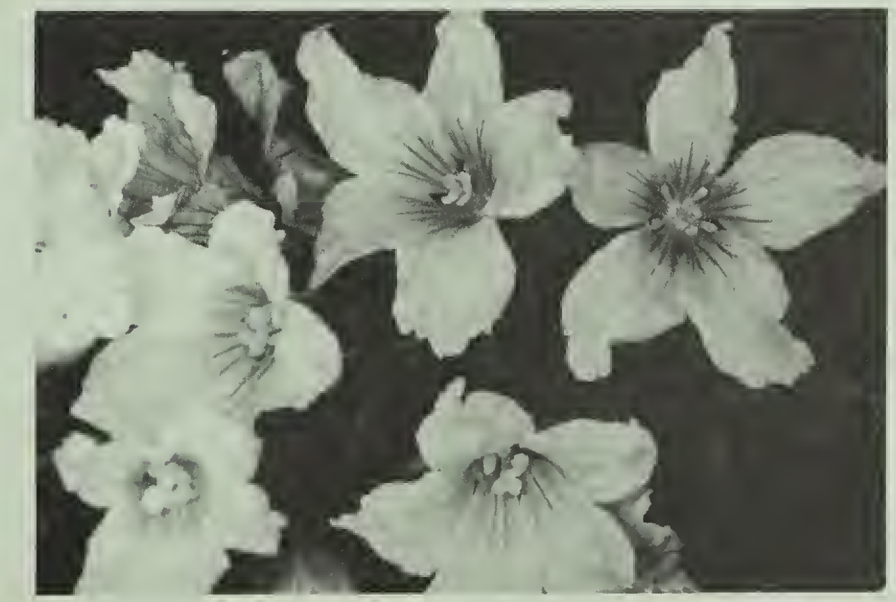

Fig. 4. Flowers of *Xanthoceras sorbifolium*

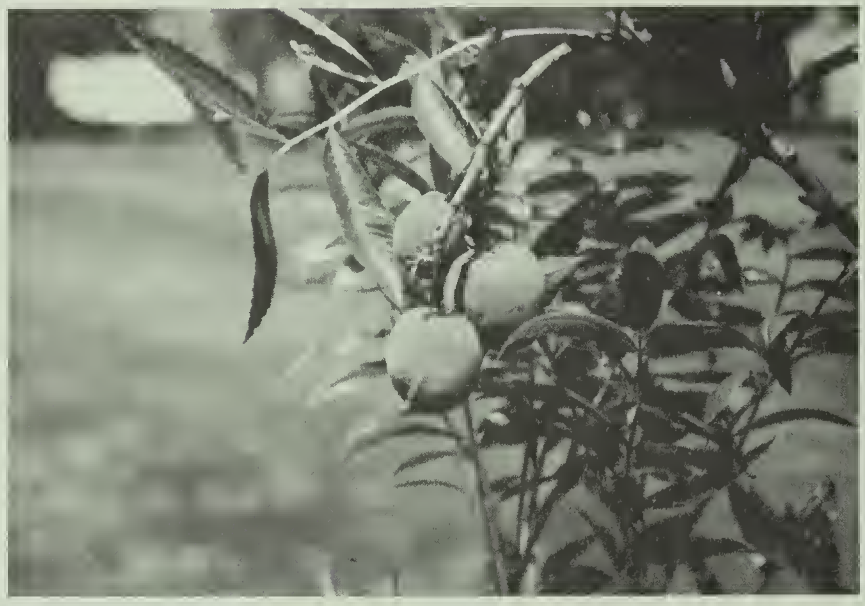

Fig. 5. Fruit of *Xanthoceras sorbifolium*

purposes is to cover them with a heavy-duty plastic in late August or September.

It has been our experience that *Xanthoceras* is distinctly tender in the Philadelphia area. Out of six plants which we have obtained over a period of 30 years only one has survived. This is today an upright shrub about 8 feet tall, located close to the service driveway south of the gallery. It is worthy of mention that a small tree of this species which had flourished for several years at the Morris Arboretum in Chestnut Hill died in the early 1960's.

Ungnadia speciosa Endl. Mexican buckeye. This is a monotypic genus, its single species (a shrub or small tree) occurring in the wild from northern Mexico to Texas. The genus was named by Stephen Endlicher in honor of Baron Ungnad, who is said to have introduced the horse-chestnut into Europe.

The Mexican buckeye is an upright shrub with alternate, pinnately compound leaves, the ovate-lanceolate leaflets of which are long-tapering at the apex and finely serrate on the margins. The rose-colored flowers are borne in lateral fascicles or corymbs and the long exserted stamens give added attractiveness when the plant is in bloom, which with us is usually in early May. (Fig. 6). The fruit is a pear-shaped leathery capsule composed usually of three carpels.

The arboretum's two specimens of this plant were obtained from the Teas gardens in Houston, Texas, in 1947. Today they are both vase-shaped shrubs about 8 feet tall. One is located north of the school along Lapsley Road, the other is south of the Gallery. Both of them flower profusely in early May and produce fruit rather sparingly in mid-July.

Sapindus. Soapberry. A genus of about 15 species of deciduous trees found in the subtropical or warm temperate regions of Asia and North America. The alternate leaves are pinnately compound and the leaflets, unlike those of *Xanthoceras* and *Ungnadia,* are entire. The small flowers are borne in large terminal or axillary panicles and the fruit is a globose several-seeded berry.

The name is contracted from Sapo-indicus (Indian soap), and refers to the fact that the fruit contains a saponaceous principle which may be used to produce a lather.

S. Drummondii Hook. & Arn. Soapberry, wild China-tree. This species, the only one hardy in our area, occurs (usually on calcareous soils) from Mexico north to southern Missouri and Kansas. It is a tree up to 15 m. (50 feet) with 4 to 9 pairs of lance-acuminate leaflets and small whitish flowers borne in large panicles. The globose fleshy fruit is at first yellow but later turns blackish.

In the summer of 1969 we obtained five small plants of this species from the Hess Nurseries, at Mountain View, N.J. One of these was set out on the grounds near other members of the family. The rest are still in our nursery. Our evaluation of this species will have to await a later issue of this publication. We know, however, that it is entirely hardy at the Brooklyn Botanic Garden and hope that it may succeed with us.

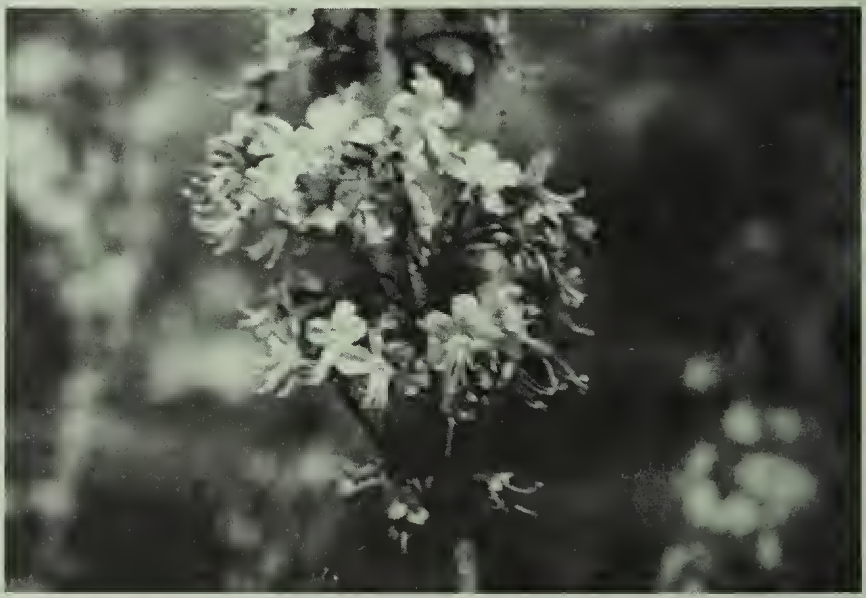

Fig. 6. *Ungnadia speciosa* in flower

Registration Changes

The registration of new cultivar names in genera of woody plants is administered by the International Registration Authority. The responsibility for such registration is assigned an institution rather than to an individual, although it is customary for the institution to delegate the actual registration procedures to one of its members.

During recent months the following changes in registration centers have been approved:

Ilex: Authority transferred from Rutgers Unviersity, New Brunswick, N.J. to the U.S. National Arboretum, Washington, D.C., with Mr. Gene K. Eisenbeiss as registrar.

Magnolia: Authority transferred from the Morris Arboretum of the University of Pennsylvania to the American Magnolia Society, with Dr. John M. Fogg, Jr., as registrar.